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The palaoenvironment of an early Middle Miocene Paratethys sequence in NE Austria with special emphasis on paleoecology of mollusks and foraminifera

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In a multidisciplinary approach including data on paleoecology of foraminifera, mollusks, balanids and coralline algae, as well as on taphonomy, sedimentology, sequence stratigraphy and regional geology, the environmental reconstruction for the Niederleis Basin (a satellite depression of the Vienna Basin and important fossiliferous site of the Central Paratethys region) is provided. The data came from two sections in proximal (section Buschberg) and distal (section Bahnhof) position relative to the northwesterly exposed basement chain (Leiser Berge). The accomplished analysis confirmed the presumed bathymetric and paleogeographic differences. The study represents a partial results of Austrian Scientific Foundation (FWF) projects „Temporal and spatial changes of microfossil associations and ichnofacies in the Austrian marine Miocene" (P 13743 - BIO) and „Evolution Versus Migration: Changes in Austrian Marine Miocene Molluscan Paleocommunities" (P 13745 - BIO).

The data on foraminifera suggest that the sediments from the section Buschberg were deposited in water depth not exceeding 100 m and that a possible displacement episode occurred at the base of the studied sequence. The composition and taphonomy of shell beds within that partial section indicates proximal storm deposition within the inner shelf area. The masses of balanids implies the presence of abundant littoral hard substrata. Relatively deep water-sediments at only 200 m distance from the paleoshore indicate the presence of a drowned paleocliff, that may correspond to the northwestern tectonic margin of the Niederleis basin.

The sediments from the section Bahnhof were deposited in deeper water. A paleodepth from 100 to 500 m for the Bahnhof-section is indicated by foraminifera. Water depth increased from the bottom to the top of the section. Suboxic conditions prevailed at its base, more oxic condition prevailed upward. A massive displacement episode occurred in the middle part of the section and involved sediment from a shallower environment. Displaced benthic foraminifera and mollusks suggest water depth not exceeding 30 m. Whereas the fossil record from autochthonous layers implies deepening upward, the mixed fossil assemblage from tempestites implies shallowing of the supply center, respective gradual installation of extended onshore to lagoonal habitats within the basin's marginal area. Thus a synsedimentary tectonic sagging respective the subsidence of the basin as a result of synchronous extensional tectonics is inferred. This interpretation can be underpinned with the regional geologic situation. Moreover it stays in accordance with the inferred biostratigraphic position of studied series within the late Lower Lagenidae Zone corresponding with the regional maximal flooding surface respective with the following high stand system tract of the Vienna Basin.